



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.	
10/563,191	07/24/2006	Gerhard Schanz	3577	6002	
7590	05/05/2009		EXAMINER		
Striker Striker & Stenby 103 East Neck Road Huntington, NY 11743		JANCA, ANDREW JOSEPH			
		ART UNIT	PAPER NUMBER		
		1797			
		MAIL DATE	DELIVERY MODE		
		05/05/2009	PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/563,191	SCHANZ ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Andrew Janca	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 09 March 2009.
- 2a) This action is **FINAL**.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 20-49 is/are pending in the application.
- 4a) Of the above claim(s) 32-48 is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 20-31 and 49 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) 20-49 are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____ .                                    |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ .  | 6) <input type="checkbox"/> Other: _____ .                        |

## DETAILED ACTION

### ***Election/Restrictions***

1. Claims 32-48 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 3/9/2009.

### ***Priority***

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 20-30 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2003/0039169 A1 to Ehrfeld et al.

6. With regard to claim 20, Ehrfeld et al teach a packaging system for in-situ preparation of a formulation from at least two constituents, in which said at least two constituents are separately stored until said formulation is prepared (para 15), wherein said packaging system comprises at least two separate storage chambers for storing said at least two constituents separately (para 15) and at least one static micromixer (Ehrfeld et al claim 15) for mixing said at least two constituents to prepare the formulation; wherein said at least one static micromixer comprises at least one component in the form of a disk (2a, 2b) (figure 3a, para 51); wherein said disk (2a, 2b) is provided with at least one inlet opening (4b) disposed in a plane of said disk for introduction of at least one feed stream into a linking channel (31) and with at least one outlet opening (34) disposed in the plane of said disk for outflow of the feed stream into a mixing zone (7), said at least one inlet opening (4b) being connected with said at least one outlet opening (34) in a communicating manner via said linking channel (31) which is disposed in the plane of said disk (para 30); and wherein said linking channel (31) is divided by microstructure units, the unnumbered raised portions between part channels 32, into two or more part channels (32, 33, 34) before opening into the mixing zone (7), and that the width of the part channels (32, 33, 34) is less than a width of the mixing zone (7) (figure 3a; para 51). Ehrfeld et al does not explicitly teach that the widths of

the part channels be in the millimeter to submillimeter range: however, it would have been obvious to one of ordinary skill in the art to manufacture the disk of Ehrfeld et al so that all its channels be of millimeter to submillimeter range: the motivation would have been the teaching by Ehrfeld et al that they disclose a “Micromixer”, as their invention is titled. Alternatively, it has been held that where the only difference between a claimed invention and the prior art was a recitation of relative dimensions of the claimed device, and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device is not patentably distinct from the prior art device. See *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984).

7. With regard to claim 21, Ehrfeld et al further teach that the static micromixer comprises a system for conveying the constituents that are kept separated until preparation of the formulation (paras 1, 15, claim 15) and the static micromixer comprises a housing (para 26). Ehrfeld et al do not explicitly teach that the housing should have at least 2 feed stream inlets for introduction of respective feeds to be mixed and at least one fluid outlet to be a product stream outlet for a product stream. However, it would have been obvious to one of ordinary skill in the art to provide two fluid inlets: the motivation would have been to supply the at least two fluids to be mixed from the at least two reservoirs taught by Ehrfeld et al (para 15); and at least one outlet: the motivation would have been because Ehrfeld et al teach their apparatus to be a micromixer (para 1), not a container for fluids.

Art Unit: 1797

8. The additional elements of claim 22, including that the static micromixer comprises a plurality of said disks (2a, 2b) arranged in a stack in which said disks are superposed over each other so that subsidiary channels communicating with the feed stream inlets are formed by said at least one inlet opening (4b) of each of said disks and the mixing zones (7) of said disks together form a main channel connected with the at least one product stream outlet for carrying away a mixed product, and wherein the main channel and the subsidiary channels extend through said stack of said disks, are taught by Ehrfeld et al (paras 51-53, claim 15).

9. With regard to claim 23, Ehrfeld teaches that a ratio of the width of the mixing zone (7) to the width of each of the part channels (32, 33, 34) is greater than 2 (figure 3a).

10. The additional elements of claim 24, including that the at least one disk (2a, 2b) additionally has at least one flow-through opening, one of (4a, 4b), are taught by Ehrfeld et al (figure 3a).

11. The additional elements of claim 25, including that at least one of the inlet openings (4b) or flow-through openings (4a, 4b) or the mixing zone (7) is enclosed by the plane of the disk and that the linking channel (31) is formed by an indentation, are taught by Ehrfeld et al (paras 30, 51).

12. The additional elements of claim 26, including that at least one of the inlet openings (4b) or flow-through openings (4a, 4b) is disposed at the edge of the disk or as a recess at the edge of the disk, are taught by Ehrfeld et al (figure 3a).

Art Unit: 1797

13. The additional elements of claim 27, including that said at least one inlet opening (4b) of said disk (2a, 2b) comprises respective inlet openings (4b) for corresponding fluid streams, and said respective inlet openings are connected by corresponding linking channels (31) with said mixing zone (7), are taught by Ehrfeld et al (figure 3a).

14. The additional elements of claim 28, including that said at least one outlet opening (34) comprises respective outlet openings (34) arranged on a circular line, are taught by Ehrfeld et al (figure 3a).

15. The additional elements of claim 29, including that said disk (2a, 2b) is provided with additional through-going openings (4b) and with additional part channels (32-33-34) the latter being integrated into the microstructure units (identified regarding claim 1 above) and being separated from the part channels (32-33-34), are taught by Ehrfeld et al: there are in all four separate sets of inlet channel (4b)-part channel (32-33-34)-outlet (34) channel systems on the disk of Ehrfeld et al (figure 3a).

16. The additional elements of claim 30, including that the linking channels (31) of the disks (2a, 2b) in said stack are formed by indentations in the disks and the linking channels (31) are divided by said microstructure units disposed in the disks (2a, 2b) into said part channels (32-33-34) prior to opening into the mixing zone (7), are taught by Ehrfeld et al (figure 3a; paras 30, 51).

17. With regard to claim 49, Ehrfeld et al teach a static micromixer (Ehrfeld et al claim 15) for mixing two or more constituents (para 15) to form a mixture immediately prior to use of the mixture, said static micromixer comprising at least one component in the form of a disk (2a, 2b), and wherein said disk (2a, 2b) is provided with at least one

Art Unit: 1797

inlet opening (4b) disposed in a plane of said disk for introduction of at least one feed stream into a linking channel (31) and with at least one outlet opening (34) disposed in the plane of said disk for outflow of the at least one feed stream into a mixing zone (7), said at least one inlet opening (4b) is connected with said at least one outlet opening (34) in a communicating manner via said linking channel (31) which is disposed in the plane of said disk; and wherein said linking channel (31) is divided by microstructure units, the unnumbered raised portions between part channels 32, into two or more part channels (32, 33, 34) before opening into the mixing zone (7). Ehrfeld et al does not explicitly teach that the widths of the part channels be in the millimeter to submillimeter range: however, it would have been obvious to one of ordinary skill in the art to manufacture the disk of Ehrfeld et al so that all its channels be of millimeter to submillimeter range: the motivation would have been the teaching by Ehrfeld et al that they disclose a “Micromixer”, as their invention is titled. Alternatively, it has been held that where the only difference between a claimed invention and the prior art was a recitation of relative dimensions of the claimed device, and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device is not patentably distinct from the prior art device. See *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984).

18. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ehrfeld et al in view of US 6,207,719 B1 to Pardikes. Ehrfeld et al do not teach that the mixing zone (7) may filled by a molded element that closes off said at least one outlet opening

(34) in an idle state, and said molded element is entirely or partly removed from the mixing zone (7) during operation, thereby entirely or partly opening the at least one outlet opening (34). However, it would have been obvious to one of ordinary skill in the art to supply a plug for the central channel formed by the mixing zone, as does for instance Pardikes, who teaches a mixing chamber having bores to the outside 306, 310 (figure 14); which bores may be selectively closed with plugs (11:10-17). It would have been obvious to one of ordinary skill in the art to provide a plug closing off at least one end of the mixing zone, such that the outlet openings (34) leading to it are closed off: the motivation would have been to selectively open and close the channels leading to the mixing chamber of the apparatus, depending on specific needs (Pardikes 11:10-17).

### ***Double Patenting***

19. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir.

Art Unit: 1797

1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

20. Claims 20-30 and 49 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-17 of copending Application No. 10/563,348. Although the conflicting claims are not identical, they are not patentably distinct from each other because each describes static micromixers having disks with at least one inlet opening for the introduction of at least one feed stream into a linking channel disposed in the plane of the disk and at least one outlet opening for the outflow of the feed stream into a mixing zone, where the inlet opening is connected with the outlet opening in a communicating manner through the linking channel disposed in the plane of the disk, and where the linking channel before opening into the mixing zone is divided by microstructure units into two or more part channels, the widths of the part channels being in the millimeter to submillimeter range

and being smaller than the width of the mixing zone; with particular ratios between the channels; with additional flow-through openings, connected inlet openings, and integrated part channels; with the outlet openings arranged in a circular line; the channels formed as recesses in the disks; where the disks may be stacked, and incorporated into a micromixer or reactor with a housing with at least two fluid sources.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

21. Claims 20-30 and 49 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-19 of copending Application No. 10/563,354. Although the conflicting claims are not identical, they are not patentably distinct from each other because each describes static micromixers having disks with at least one inlet opening for the introduction of at least one feed stream into a linking channel disposed in the plane of the disk and at least one outlet opening for the outflow of the feed stream into a mixing zone, where the inlet opening is connected with the outlet opening in a communicating manner through the linking channel disposed in the plane of the disk, and where the linking channel before opening into the mixing zone is divided by microstructure units into two or more part channels, the widths of the part channels being in the millimeter to submillimeter range and being smaller than the width of the mixing zone; with particular ratios between the channels; with additional flow-through openings, connected inlet openings, and integrated part channels; with the outlet openings arranged in a circular line; the

Art Unit: 1797

channels formed as recesses in the disks; where the disks may be stacked, and incorporated into a micromixer or reactor with a housing with at least two fluid sources.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Conclusion***

22. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Janca whose telephone number is (571) 270-5550. The examiner can normally be reached on M-Th 8-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on (571) 272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1797

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AJJ

/DAVID L. SORKIN/  
Primary Examiner, Art Unit 1797